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Title: Suicide attempts requiring hospitalisation in patients with eating disorders: a retrospective cohort study

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Abstract

Introduction

Suicide attempts requiring hospitalisation are known to be common in patients who are diagnosed with eating disorders. Attempting suicide is a major indicator for those at risk of completed suicide. Both the specific eating disorder diagnosis and the influence of psychiatric comorbidities on suicide attempts requiring hospitalisation were investigated, with demographic and socioeconomic variables as confounders, over a 10-year observation period from January 2007 to March 2017.

Methods

Anonymised health record data from the South London and Maudsley NHS Foundation Trust (SLaM) was retrieved through the Clinical Records Interactive Search (CRIS) data resource; this is linked to national Hospital Episode Statistics (HES) data. This data includes all diagnoses for inpatient admissions. Hazard ratios, with 95% confidence intervals, were calculated from cox regression analyses and the effects of a number of confounders were estimated by performing multivariable analyses.

Results

In total, 4,895 patients were diagnosed with either anorexia nervosa (AN), bulimia nervosa (BN) or eating disorder otherwise not specified (EDNOS). Of these, 331 (6.7%) had attempted suicide requiring hospitalisation and 21 (0.04%) completed suicide. The eating disorder category associated with the highest risk of a suicide attempt was AN (HR 1.43, 95%CI 1.08-1.89, p=0.01). The risk was significantly increased further if the patient had a comorbid diagnosis of personality disorder, depression, bipolar affective disorder and substance misuse.

Conclusion

Suicide attempts requiring hospitalisation have a high incidence rate amongst patients with eating disorders and the risk is significantly increased in AN. Co-morbid psychiatric illness and suicidal ideation should be carefully assessed in all eating disorder patients.

Key Words: suicide attempt, self-harm, suicide, anorexia nervosa, bulimia nervosa

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Data availability Statement: The data accessed by CRIS remain within an NHS firewall and governance is provided by a patient-led oversight committee. Subject to these conditions, data access is encouraged and those interested should contact RS (robert.stewart@kcl.ac.uk), CRIS academic lead

Eating disorders (ED) include a variety of diagnoses such as anorexia nervosa (AN), bulimia nervosa (BN) and eating disorder otherwise not specified (EDNOS) (APA 2013). Eating disorder patients have high rates of mortality with psychiatric comorbidity contributing to these elevated rates (Himmerich et al 2018; Himmerich et al 2019). They are more likely to present to hospital with self-harm (Smithius et al 2018; Perez et al 2018) or a suicide attempt (Suokas et al 2014). Prevalence of self-harm has been reported between 13.6% - 42.1% for AN, between 26%-55.2% for BN, and 26.2% for EDNOS (Svirko & Hawton 2017; Claes et al 2013). There is also an increased risk of suicide attempts in the eating disorder population with reported prevalence being as high as 9.2% (Runfola et al 2014) and rates of completed suicide have been reported as 18 times more likely in AN and 7 times more likely in BN compared to the general population (Smith et al 2018).

Various explanations for the co-occurrence of EDs and suicidal behaviour have been explored. One explanation is that people with EDs have elevated rates of comorbid disorders that are in themselves associated with increased suicide risk (Hudson et al 2007). Several studies have found the association between EDs and suicide weakens when controlling for

comorbid diagnoses (Smith et al 2018; Forrest et al 2017; Bodel et al 2013; Yao et al 2016). Other studies have identified the possibility of shared genetic pathways predisposing to both conditions (Wade et al 2015). Another consideration is the association of EDs with emotional dysregulation (Dodd et al 2018): there is evidence to suggest that both BN and AN may be associated with this (Wang et al 2018).

Suicide attempts are associated with increased risk of suicide (Wang et al 2018). There are a number of allied factors that have been considered to increase the risk of completed suicide, such as interpersonal factors associated with EDs, fearlessness about death, perceived burden by patients and increased capability due to reduced responses to pain (Runfola et al 2014; Wang et al 2018; Goldstein & Gvion 2019; Navarro-Haro et al 2015). There are few large cohort studies with long mean follow-up periods that have been able to study patients with bulimia nervosa (BN), eating disorder otherwise not specified (EDNOS) and anorexia nervosa (AN) who either attempt or complete suicide.

The UK has an established 'National Health Service' where patients are referred by their GP (general practitioner; a family physician working in primary healthcare services) to specialist services, such as secondary mental healthcare services and these are publicly funded. The cumulated incidence and demographics of patients within a UK secondary mental healthcare service diagnosed as having an ED, who were subsequently admitted to hospital with a serious suicide attempt requiring hospital admission, were estimated. The effect of comorbid psychiatric diagnoses on the risk of suicide attempt was also investigated.

Methods

Setting and study design

A retrospective cohort study was conducted using data obtained from South London and Maudsley National Health Service Foundation Trust (SLaM). This is a secondary mental

health service covering southeast London; patients come from the London boroughs of Croydon, Lambeth, Lewisham, Southwark, Bromley, Bexley and Greenwich and has a local population of approx. 2 million people. This cohort was selected from this database to include patients diagnosed with an eating disorder. SLaM has fully electronic records since 2006 and the National Institute for Health Research funded Biomedical Research Centre supports the infrastructure for rendering its anonymised records available for research.

Inclusion criteria and exposures

The analysed cohort was extracted via Clinical Record Interactive Search (CRIS) and comprised individuals who received an International Classification of Diseases (ICD-10) of eating disorder, (F50.0-50.9) within the observation window of 1 January 2007 to 31 March 2017. To extract relevant patients with a diagnosis of AN, BN or EDNOS, there were two methods available using the EHRs: firstly, using structured information on diagnosis from drop down fields in the source record, secondly supplementing this data by information extracted from open text fields searching for relevant diagnoses using a bespoke algorithm generated using the Generalised Architecture for Text Engineering (GATE) software. The comorbidity exposures of interest were diagnoses of substance misuse (F10-F19), bipolar disorder (F31), depression (F32 and F33) and personality disorder (F60) determined by structured information in EHRs on diagnoses from drop down fields in the source record. The selection of comorbid diagnoses was based on previous studies using similar data sources, which were known to be most associated with this study's primary outcome of interest (Himmerich et al 2019).

Primary Outcome

The outcome of interest was a hospitalised episode of care for self-harm (X60-X84) (hereafter termed a suicide attempt requiring hospitalisation) ascertained using linkage to Hospital Episode Statistics (HES) carried out by NHS Digital using NHS numbers, which are unique patient identifiers. A record in the CRIS/SLaM register will have linked HES records that include admissions to SLaM, to other mental health providers in England, and to general hospitals (Davis et al 2018) . Only patients who required admission to the medical hospital following an act of self-harm were included; this was assumed as a suicide attempt due to the increased lethality of the self-harm act, as the act required medical intervention. Although it is not possible to determine the suicidal intent using this dataset, there is some evidence to suggest that an act with higher lethality is associated with increased suicidal intent (Kumar et al 2006; Beck et al 1975). Furthermore, research demonstrates that a more violent act is associated with subsequent completed suicide (Runeson et al 2010).

It is important to note that all community and inpatient services are provided by the same healthcare system, the NHS, with patients transitioning between the services within the NHS, depending on their needs and severity of illness. Care within the NHS is catchment-area based, therefore everyone living within an area accesses the same services and the majority of people do not have alternative routes for help; estimates suggest that 11% of the whole population in the UK have a form of private medical insurance, which does not cover for presentations to accident and emergency therefore almost all patients who require medical help following an emergency will present through NHS systems (The Kings Fund 2014).

Covariates

The year and month of birth, gender, ethnicity and marital status were retrieved from the CRIS database. Age in years was calculated from the individual's first eating disorder diagnosis in the observation window or from January 2007 if the diagnosis preceded the

observation window. Recorded ethnicity was classified into three categories: 'White UK' (including 'any other White background' and 'Irish'), 'Black' (including 'African', 'Caribbean' and 'any other Black background') and 'Mixed/others/unknown'. Recorded marital status was classified into four groups: 'married' (including cohabitation, married, and married/civil partnership), 'single', 'divorced' (including separated, civil partnership dissolved) and 'others' (including not known). Multiple deprivation score is a small-area-level measure of socioeconomic status, based on the individual's address closest to the diagnosis of the eating disorder in the observation window, covering the following seven components: 'employment, income, education, health, barriers to housing and services, crime and the living environment' with specific weightings. The Index of Multiple Deprivation score is a well-established measure which has been widely used as a regional indicator for socioeconomic status in previous studies. The score is then transformed into percentiles (from 1 to 100), with higher scores indicating greater deprivation (and thus a lower socioeconomic status in the neighbourhood). In the analysis, deprivation score was grouped into tertiles.

Statistical analysis

Analysis was completed using Stata software. All patients were eligible for analysis. Descriptive statistics were used to characterise the study participants. Proportional hazards assumptions were checked by assessing interactions with survival time using appropriate methods. Univariate cox proportional hazards regression was used to calculate hazard ratios with 95% confidence intervals using the suicide attempt requiring hospitalisation as the 'event' within the observation period. Comparisons were then made between AN, BN and EDNOS. The observation period started on the date of the first diagnosis after the 1 January 2007 or on this date if the diagnosis was made prior to this date. The observation period ended on either the final date of data collection: 31 March 2017 or if the study subject

attempted suicide or died before this date, the date this was recorded by the EHRs. As the dataset are linked to HES data, which are a national dataset of hospital admissions, those emigrating to another part of the country will still be captured by the data; anyone who exits the NHS system will be censored at this time point. Multivariable analyses were then performed to estimate the effect of the psychiatric comorbidities.

Ethical Approval

Ethical approval was obtained from the Oxfordshire Research Ethics Committee for the use of CRIS as a source of data for secondary analysis (reference 08/H0606/71+5), alongside the linkage to both Office of National Statistics (ONS) and HES data sources.

Results

Descriptive Statistics

A total of 4,895 individuals with a diagnosis of AN, BN and EDNOS were identified from the CRIS system. Of these, 4490 (91.8%) were female and the mean age was 25.9 (SD 11.1) with an age range of 4.8-90.6 years old. Detailed information is available about the age distribution in Table 1. In those under 10 years of age, 25 of these had a diagnosis of EDNOS with only 4 diagnosed with AN (and the youngest three below the age of 6 were all diagnosed with EDNOS). In those over 50 years of age, 66 had a diagnosis of EDNOS, 98 had a diagnosis of AN, with 54 patients diagnosed with BN.

Eating Disorder Diagnoses

Of the 4895 individuals, 2264 had a diagnosis of AN (46.3%), 1420 (29.0%) had a diagnosis of BN and 1211 (24.7%) had a diagnosis of EDNOS. During the study period there were multiple diagnoses; 143 (2.9%) individuals with diagnoses of both AN and BN at some point over the study period, 272 (5.6%) with both diagnoses AN and EDNOS and 137 (2.8%) had both EDNOS and BN; 26 (<1%) patients had all three diagnoses at some point during the study period. An appropriate diagnostic hierarchy of AN> BN and a specific diagnosis (eg AN or BN) > EDNOS was used for analysis, to ensure patients were not double-counted. During the observation period 331 (6.8%) patients had a suicide attempt requiring hospitalisation at least once. Amongst the 331 who were admitted, the mean number of suicide attempts was 2.74 (SD 4.13) admissions with a range of 1-39 admissions. In total there were 21 (<1%) completed suicides during the follow-up period.

Further information about the breakdown of eating disorder diagnosis and number of suicide attempts is available in Table 2.

Method of suicide attempt

The most common method of suicide attempt, requiring admission to hospital, was an overdose or poisoning attempt, out of the total number of recorded diagnoses for admission, some admissions had multiple causes recorded in diagnosis (total=2256), 789 of these were documented as having taken an OD or self-poisoned.

Statistical analysis of suicide attempts

Further descriptive information for age, gender, marital status, ethnicity, social deprivation and comorbidities on suicide attempt admissions, is available in Table 3. Univariate cox regression analyses were used to calculate unadjusted hazard ratios for each demographic.

Multivariable analysis by Cox Regression

The total number of patients with a comorbid psychiatric diagnosis was 991 (20.3%) of the cohort. Cox Regression univariate analyses revealed significant independent associations of suicide attempt with each comorbid diagnosis, including: substance misuse (in particular alcohol and cocaine use), personality disorder, bipolar disorder and depression. Multivariate Cox regression analysis was calculated for adjusted hazard ratios for age, gender, marital status, ethnicity & social deprivation scores (refer to table 4).

Discussion

This study demonstrates that eating disorders are associated with a high incidence rate of suicide attempts requiring hospital treatment and admission. In total 6.8% of patients in this sample had attempted suicide following diagnosis of ED and <1% had completed suicide. Comorbid diagnosis, in particular personality disorder, depression, bipolar illness,

substance misuse increased the risk even further. In particular both personality disorder (HR= 8.40, p <0.001) and bipolar disorder (HR 3.41, p<0.001) appeared to have the strongest association of attempted suicide. Those most at risk of a suicide attempt requiring hospital admission in this sample were having a diagnosis AN, deprivation group 2 and any comorbid diagnosis to include personality disorder, substance misuse, depression and bipolar disorder.

This study provides further evidence that those with a diagnosis of AN are most at risk of attempted suicide when compared to BN and EDNOS populations. One recent meta-analysis suggests that attempted suicide was more frequent in those diagnosed with BN (21%) than in AN (12.5%), but the difference was statistically significant only when BN was compared with AN restrictive type (9-10%) (Mandelli et al 2019). A further systematic review also reported that suicide attempts and serious self-harm were more frequent in the purging disorders such as BN or AN purging subtype, (21.8% for AN and 32.7% for BN) (Cucchi et al 2016). However, this study did not seek to separate subtypes of AN, perhaps one explanation for this difference in results. Moreover, other studies looking longitudinally at suicide attempts in eating disordered patients, demonstrated that AN patients were most likely to attempt suicide with relative risk rates as high as 8.01 compared to BN at 5.34, other literature states that double the numbers of AN (22%) patients attempt suicide in comparison to BN (11%)at least once (Suokas et al 2014; Franko & Keel 2006). Furthermore, literature suggests that those with a diagnosis of AN were 18 times more likely to complete suicide and BN patients were 7 times more likely to complete suicide (Smith et al 2018).

There are particular risk factors amongst those diagnosed with eating disorders that may increase the risk further, studies suggest substance misuse, depression and personality disorder increase the risk of suicide attempt or serious self-harm (Yao et al 2016; Dodd et al 2018; Goldstein & Gvion 2019; Cucchi et al 2016; Forcano et al 2011). This study provides further evidence that substance misuse, in particular alcohol and cocaine (although relatively

low numbers), personality disorder, bipolar and depressive disorders all increased the risk further significantly.

Although the focus of this paper is not to explore mechanisms, literature suggests a number of potential reasons for the increased risk of suicidal behaviour in eating disorder populations. Factors potentially involved include body dissatisfaction and low self-esteem (Perez et al 2018). Growing evidence suggests the risk of self-harm is related to emotional dysregulation present in both EDs and patients who self-harm or attempt suicide, where both self-harm and altered eating behaviour are used to self-punish and avoid negative emotions (Smithius et al 2018; Svirko & Hawton 2017; Muehlenkamp et al 2012; Muehlenkamp et al 2019). Both groups of patients reported similar intent to hurt themselves both in the short and long term. In particular restrictive eating was associated with death-related intentions (Fox et al 2019), perhaps one reason behind a higher rate of attempted and completed suicide in AN populations whereas BN was associated with higher emotional reactivity resulting in a greater risk of impulsivity and less severe, but more frequent suicide attempts and self-harm (Goldstein & Gvion 2019; Cucchi et al 2016; Varela-Besteiro et al 2017; Kostro et al 2014). Furthermore, studies suggest that there is an increased difficulty in effective emotional regulation, rather than impulsive regulation in the AN population, increasing distress further and resulting in more serious attempts of self-harm and suicide (Suokas et al 2014; Wang et al 2018). There is also a suggestion that in all ED groups there is a reduction in the pain response and increased dissociation symptoms, due to chronic starvation, perhaps dampening down the concerns or fear of a serious suicide attempt (Goldstein & Gvion 2019; Navarro-Haro et al 2015) interestingly, BN groups have a higher fearfulness about death than AN groups (Witte et al 2016).

The main strengths of this study are the study design and size of cohort using CRIS as the data source. CRIS is one the largest collections of users for secondary mental healthcare

services in Western Europe. Using this data source, a retrospective cohort study of 4895 patients with an ED were identified, 331 of these patients had attempted suicide. Systematic and narrative reviews on the subject matter report a lack of longitudinal designs as most research is cross sectional or retrospective (Kostro et al 2014; Goldstein & Gvion 2019). Therefore, the longitudinal nature in design, with the diagnosis of ED preceding the suicide attempt is a strength of this study.

The main limitation is that this study analyses only hospital-admission suicide attempts, rather than all presentations to the emergency department such as suicide attempts that do not make it further than the emergency department. Therefore, these results may only be generalisable to suicide attempts requiring hospitalisation. The study does not capture past history of suicide attempts and self-harm and assumes they start after the diagnosis of the ED for the purpose of the regression analysis.

The EDNOS diagnosis refers to DSM-IV which had been issued in 2000 (APA 2013). DSM-IV was followed by DSM-5 in 2013 (APA 2000). DSM-5 led to significant changes within this diagnostic category (APA 2000). The EDNOS equivalent in the 10th edition of the International Classification of Diseases (ICD-10) was “eating disorder, unspecified” (WHO 1992). This diagnosis has been revised in ICD-11 which will be introduced in the UK probably in 2020 (ICD-11 2019).

This cohort started in 2007 well before DSM-5 and ICD-11. Therefore, the data had to refer to the DSM-IV and ICD-10 diagnostic categories. Meanwhile, the EDNOS diagnosis has undergone a major development with a more differentiated view on ED which are not AN or BN. The new approved diagnoses according to DSM-5 and ICD-11 include binge eating disorder (BED; characterised by binge eating episodes, loss of control and feelings of shame and guilt), avoidant/restrictive food intake disorder (ARFID; an eating disturbance manifested by a restrictive eating pattern with persistent failure to meet appropriate

nutritional needs), pica (the consumption of non-food) and rumination disorder (regurgitation and re-chewing food). Further provisional diagnoses of DSM-5 called "Other Specified Feeding and Eating Disorders (OSFED)" include atypical AN, BN of low frequency and/or limited duration, BED of low frequency and/or limited duration, purging disorder and the night eating syndrome (APA 2013).

These more specific diagnoses will allow a more nuanced ED research perspective in the future. However, the data do not permit such a sophisticated view, and it will be necessary to plan coming studies to investigate mortality and suicidality of patients using these more advanced diagnostic categories.

Clinical Implications

These results provide evidence that there are risks of suicide attempts and self-harm in all ED patients, but AN patients in particular are at a higher risk when compared to BN and EDNOS patients. Therefore, screening and risk assessments in this patient group is especially important. A screening tool specific to eating disorders highlighting some of the factors associated with an increased risk of suicide could be developed using this data as a starting point. Further research on the mechanisms underlying the co-occurring conditions need more exploring and there is increasing evidence on the similarities in emotional dysregulation and the use of treatments traditionally aimed at self-harm and repeated suicide attempts, such as dialectical behavioural therapy, as a promising adjunct treatment in eating disorders (Peterson et al 2019; Lynch et al 2013; Fischer & Peterson 2015).

Conclusion

The study demonstrates that suicide attempts and serious self-harm among all patients with ED are frequent, with a higher risk in those diagnosed with AN compared to BN or

EDNOS. Comorbid psychiatric diagnoses attenuate the risks further, in particular personality disorder, substance misuse and bipolar disorder. Therefore, the assessment of suicidal ideation is crucial as part of routine risk assessment in patients with all forms of eating disorder, but in particular AN and those with comorbid psychiatric illnesses.

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Table 1 Summary statistics of age, suicide attempt, death, comorbid diagnoses and eating disorder diagnoses

Age group Years , (n)% total	**Suicide Attempt, n (% in age group of total ing)**	**PD n (%)**	**Bipolar n)**	**Depression n (%)**	**Substance n (%)**	**AN (% by age group with a diagnosis)**	**BN**	**EDNOS**
<10 (29) <1%	0	0	0	2 (6.9%)	0	4 (13.8%)	0	25 (86.2%)
10-19 (1739) 35.5%	123 (7.1%)	142 (8.2%)	48 (2.8%)	224 (12.9%)	8(<1%)	1037 (59.6%)	248 (14.3%)	478 (27.5%)
20-29 (1764) 36.0%	128 (7.3%)	134 (7.6%)	44 (2.5%)	180 (10.2%)	33 (1.9%)	727 (41.2%)	744 (42.2%)	343 (19.4%)
30-39 (800) 16.3%	40 (5.0%)	63 (7.9%)	34 (4.3%)	110 (13.8%)	29 (8.3%)	271 (33.9%)	348 (43.5%)	205 (25.6%)

40-49 (348) **7.1%**	30 (8.6%)	42 (12.1%)	13 (3.7%)	55 (15.8%)	29 (8.3%)	127 (36.5%)	137 (39.4%)	94 (27.0%)
50+ (215) **4.4%**	10 (4.7%)	22 (10.2%)	10 (4.7%)	39 (18.1%)	11 (5.1%)	98 (46.3%)	54 (25.1%)	66 (30.7%)
TOTAL **N= 4895**	331	403	149	610	110	2264 (46.3%)	1531 (31.3%)	1211 (24.7%)

Table 2: Eating disorder subtypes and frequency of suicide attempt requiring hospital admission

Eating disorder type, n (% of total)	**No Suicide Attempt % (%C.I of those with AN, BN, EDNOS who**	**1-2 attempts**	**3-10 attempts**	**10+ attempts**

	did not attempt suicide)			
AN 46.3%	2076, 91.7% (90.4-92.8%)	145, 6.4% (5.5-7.5%|)	38, 1.7% (1.2-2.3%)	5, <1% (0.09-0.5%)
BN, 29.0%	1446, 94.4% (93.2-95.5%)	63, 4.1% (3.2-5.23%)	16, 1.1% (0.64-1.70%)	6, <1% (0.18-0.87%)
EDNOS, 24.7%	1145, 94.6% (93.1-95.7%)	48, 4.0% (3.0-5.22%)	12, 1.0% (0.56-1.7%)	6, <1% (0.22-1.1%)
TOTAL	**93.2% (92.4-94.0%)**	**5.1%** (4.5-5.8%)	**1.3%** (1.0-1.7%)	**<1% (**0.20-0.53%)

Table 3: Demographics and Comorbid diagnoses: Summary statistics and Cox regression analysis for suicide attempts with hospitalisation

Variables	**Number (%)** Age=Mean +/- SD	**Number of suicide attempts**	**Crude Hazard Ratio (95% CI)**	**P value**
Age (years)	25.9 (11.1)	331	0.99 (0.98-1.0)	0.43
Gender % Female	4490 (91.8%)	313	1.59 (0.97-2.59)	0.06

Male	403 (8.2%)	17	ref	ref
Marital Status				
Single	3606 (73.7%)	251	ref	
Married	491 (10.0%)	29	0.82 (0.56-1.20)	0.31
Divorced	97 (2.0%)	7	0.88 (0.42-1.87)	0.74
Others	701 (14.3%)	44	0.92 (0.67-1.27)	0.60
Ethnicity				
White	3897 (79.6%)	277	ref	
Black	227 (4.6%)	11	0.64 (0.35-1.18)	0.152
Others/mixed	771 (15.8%)	43	0.79 (0.57-1.09)	0.156
Deprivation Score				

Group 1	1,339 (27.4%)	100	ref	
Group 2	1,613 (33.0%)	97	0.75 (0.57-0.10)	0.047
Group 3 (most deprived)	1859 (38.0%)	125	0.86 (0.66-1.12)	0.28
Not known	84 (1.7%)	9	1.65 (0.83-3.27)	0.15
Presence of each eating Disorder				
BN	1420 (29.0%)	77	ref	ref
AN	2264 (46.3%)	188	1.66 (1.27-2.2)	<0.001
EDNOS	1211 (24.7%))	66	1.62 (0.84-1.62)	0.37
All substance misuse				

None	4785 (97.8%)	297	ref	
Alcohol	85 (1.7%)	27	4.92 (3.32-7.30)	<0.001
Opioid	13 (0.3%)	2	2.20 (0.54-8.85)	0.27
Cocaine	12 (0.3%)	5	6.30 (2.60-15.26)	<0.001
Depression				
No	4285 (87.5%)	239	ref	
Yes	610 (12.5%)	92	2.64 (2.08-3.36)	<0.001
Personality Disorder				
No	4582 (93.6%)	225	ref	
Yes	403 (6.4%)	133	8.75 (7.01-10.90)	<0.001

Bipolar Disorder				
No	4746 (97.0%)	301	ref	
Yes	149 (3.0%)	30	3.34 (2.30-4.86)	<0.001

Table 4: Multivariable analyses for suicide attempts and self-harm

Variable	**Adjusted hazard ratio**	**95% CI**	**P value**
Personality Disorder	8.40	6.68-10.54	<0.001
Substance Misuse	2.25	1.83-2.76	<0.001
Bipolar Disorder	3.41	2.34-4.99	<0.001
Depression	2.67	2.09-3.43	<0.001

BN	ref	ref	ref
AN	1.43	1.08-1.89	0.01
EDNOS	1.15	0.82-1.61	0.40